

CLAIMS

1. A test structure for determining electromigration and interlayer dielectric failure, said test structure comprising:

a first metal line situated in a metal layer of said test structure;

5 a second metal line situated adjacent and substantially parallel to said first metal line, said second metal line being separated from said first metal line by a first distance, said first distance being substantially equal to a minimum design rule separation distance;

10 an interlayer dielectric layer situated between said first metal line and said second metal line;

wherein said electromigration failure is determined when a first resistance of said first metal line or a second resistance of said second metal line is greater than a predetermined resistance, and wherein said interlayer dielectric failure is determined when a first current is detected between said first metal line and said second metal
15 line.

2. The test structure of claim 1 further comprising a metal band surrounding said first metal line and said second metal line, said interlayer dielectric layer being situated between said metal band and said first metal line and between said
20 metal band and said second metal line;

wherein said interlayer dielectric failure is determined when a second current is detected between said first metal line and said metal band or a third current is detected

between said second metal line and said metal band.

3. The test structure of claim 1 wherein said first metal line has a first width and said second metal line has a second width, said first width and said second width being substantially equal to a minimum design rule width.

4. The test structure of claim 1 wherein said first metal line comprises a second current flowing in a first direction and said second metal line comprises a third current flowing in a second direction, wherein said first direction is opposed to said second direction.

5. The test structure of claim 1 wherein said first metal line has a length approximately equal to 800.0 microns.

6. The test structure of claim 2 wherein said metal band is situated a second distance from said first metal line and a third distance from said second metal line, said second distance and said third distance being substantially equal to said minimum design rule separation distance.

7. The test structure of claim 1 wherein said interlayer dielectric layer comprises a low-k dielectric.

8. The test structure of claim 1 wherein said first metal line and said second metal line are selected from the group consisting of copper and aluminum.

9. A test structure for determining electromigration and interlayer dielectric failure, said test structure comprising a first metal line situated in a metal layer of said test structure, said test structure being characterized by:

a second metal line situated adjacent and substantially parallel to said first metal line, said second metal being separated from said first metal line by a first distance, said first distance being substantially equal to a minimum design rule separation distance, an interlayer dielectric layer situated between said first metal line and said second metal line, wherein said electromigration failure is determined when a first resistance of said first metal line or a second resistance of said second metal line is greater than a predetermined resistance, and wherein said interlayer dielectric failure is determined when a first current is detected between said first metal line and said second metal line.

10. The test structure of claim 9 further comprising a metal band surrounding said first metal line and said second metal line, said interlayer dielectric layer being situated between said metal band and said first metal line and between said metal band and said second metal line;

wherein said interlayer dielectric failure is determined when a second current is detected between said first metal line and said metal band or a third current is detected

between said second metal line and said metal band.

11. The test structure of claim 9 wherein said first metal line has a first width and said second metal line has a second width, said first width and said second width being substantially equal to a minimum design rule width.

12. The test structure of claim 9 wherein said first metal line comprises a second current flowing in a first direction and said second metal line comprises a third current flowing in a second direction, wherein said first direction is opposed to said second direction.

13. The test structure of claim 9 wherein said first metal line has a length approximately equal to 800.0 microns.

14. The test structure of claim 10 wherein said metal band is situated a second distance from said first metal line and a third distance from said second metal line, said second distance and said third distance being substantially equal to said minimum design rule separation distance.

15. The test structure of claim 9 wherein said interlayer dielectric layer comprises a low-k dielectric.

16. A test structure for determining electromigration and interlayer dielectric failure, said test structure comprising:

a first metal line situated in a metal layer of said test structure;

a second metal line situated adjacent and substantially parallel to said first

5 metal line, said second metal line being separated from said first metal line by a first distance, said first distance being substantially equal to a minimum design rule separation distance;

a metal band surrounding said first metal line and said second metal line;

an interlayer dielectric layer situated between said first metal line and said

10 second metal line, said first metal line and said metal band, and said second metal line and said metal band;

wherein said electromigration failure is determined when a first resistance of said first metal line or a second resistance of said second metal line is greater than a predetermined resistance, and wherein said interlayer dielectric failure is determined
15 when a first current is detected between said first metal line and said second metal line.

17. The test structure of claim 16 wherein said interlayer dielectric failure is determined when a second current is detected between said first metal line and said
20 metal band or a third current is detected between said second metal line and said metal band.

18. The test structure of claim 16 wherein said first metal line has a first width and said second metal line has a second width, said first width and said second width being substantially equal to a minimum design rule width.

5 19. The test structure of claim 16 wherein said first metal line comprises a second current flowing in a first direction and said second metal line comprises a third current flowing in a second direction, wherein said first direction is opposed to said second direction.

10 20. The test structure of claim 16 wherein said interlayer dielectric layer comprises a low-k dielectric.